

of the chest and that of the breast are black : there is a broad black stripe along the abdomen : the feelers are black : the nectaries are pale yellow with black tips, and less than one-fourth of the length of the body : the legs are pale yellow ; the knees, the feet, and the tips of the shanks are black.

Variations of the wing-veins. 1st var. The first vein, the lower branch of the first fork, and (with the exception of its tip) the upper branch of the second fork of the third vein, are wanting.

2nd var. The second vein has near its tip a fork which does not join the border of the wing.

3rd var. The second fork of the third vein is close to the tip of the wing.

[To be continued.]

PROCEEDINGS OF LEARNED SOCIETIES.

BOTANICAL SOCIETY OF EDINBURGH.

June 14, 1849.—Professor Balfour, President, in the Chair.

Donations to the library were announced. Specimens of the various species and varieties of tea cultivated in Assam were presented by Dr. Jameson ; and Himalayan ferns by Mr. Wyville Thomson.

The following papers were read :—

1. “ On *Nostochineæ*,” by Messrs. Ralfs and Thwaites. This was a continuation of a former paper, being descriptions of the species of *Trichormus*, *Aphanizomenon*, and *Dolichospermum*. It will appear in the ‘Annals of Natural History’ and the Society’s ‘Transactions.’

2. “ Remarks on the Origin of Plants and the Physical and Geographical Distribution of Species,” by the Rev. Dr. Fleming. The author stated that it had been assumed as a first principle, connected with an extensive series of speculations in botany and geology, that *species* had sprung from *single centres*, and that the individuals had “radiated from one point to greater or lesser distances around it,” according to Dr. J. Hooker ; or that all the individuals of a species could be traced “from a single progenitor, or from two, according as the sexes might be united or distinct,” and hence the origin of the phrase, “specific centres.” In opposition to this view, it was stated, that the history of the human race, traced to their origin in a single pair, did not furnish an analogical argument of any value ; while the dependence of the carnivorous animals on the herbivorous kinds, and the latter, along with man himself, on plants, gave good grounds to conclude that *many individuals*, of grasses for example, were requisite in the first instance, and were brought forth *abundantly*. These considerations rendered the assumption of “specific centres” extremely *improbable* ; but the occurrence of similar species, in localities remote from one another, and even in opposite hemispheres, over which, by no conceivable process, could dispersion

from a single plant be reconciled with the phænomena, did, in the opinion of the author, furnish a *demonstration* of its absurdity. Dr. Hooker, while admitting the identity of the species of opposite hemispheres, acknowledging about thirty antarctic forms as identical with European plants, even after careful comparison and with the ablest coadjutors, is inclined to consider the identity, not as indicating a multitude of progenitors of a species, but as an anomaly, the explanation of which must be sought for "*in some natural cause.*" Professor E. Forbes disposes of the anomaly in a more summary manner, by an *assertion*, that "species of opposite hemispheres, placed under similar conditions, are *representative*, not identical." If this opinion be correct, then form and structure are vastly inferior in value in the determination of species, to *latitude*, a conclusion not likely to be adopted. The author concluded by recommending the abolition of the term "specific centres of distribution," as involving an erroneous hypothesis, and the substitution of the phrase "*patches of distribution.*"

Dr. Fleming exhibited a specimen of *Xanthorrhæa hastilis*, which had been sent by Assistant-Commissary Neill from St. George's Sound, together with some implements manufactured by the aborigines, by means of the gum exuded from the bases of the leaves of this plant.

July 12.—Dr. Balfour, President, in the Chair.

The following papers were read :—

1. "On *Nostochineæ*," by John Ralfs, Esq. This paper comprised descriptions of species of *Sphærozyga* and *Cylindrospermum*, and will appear in the 'Annals of Natural History' and the Society's 'Transactions.'

2. "On the Chemical Composition of the Fluid in the Ascidia of *Nepenthes*," by Dr. A. Voelcker of Frankfort. (See p. 128.)

Dr. Fleming called attention to the fact, that the young leaves of barley distil a clear fluid from their extremities. He was not aware of any analysis having been made of it.

Dr. Balfour alluded to a similar phænomenon on the leaf of *Richardia (Calla) Æthiopica*; and Dr. Cleghorn made some remarks on the acid secretion (oxalic acid) of *Cicer arietinum*, the chick pea, which he had often observed the ryots collecting in India.

3. "Notes of Excursions in the neighbourhood of Edinburgh," by Dr. Balfour. In these notes Dr. Balfour gave a short account of the botanical trips which he had taken with his pupils this season to Dalmahoy, Arniston, Dysart, Prestonhall, Melrose, Gullane, Queensferry and the Bass, and noticed some of the more interesting plants which had been gathered.

4. Dr. Balfour exhibited specimens of roots which had entered and choked up tile-drains; viz. of an ash which had penetrated tile-drains in Hampshire, filling them up completely for a great extent, and causing serious injury, and stated that similar occurrences had been observed in various parts of the country, more especially at Muirkirk, the Carse of Gowrie and Prestonhall. The plants, whose

roots had penetrated the drains in different localities, were :—elm, poplar, willow and ash, *Polygonum Bistorta*, *Equisetum*, and *Tussilago Farfara*. The Bistort had been very troublesome in the Carse of Gowrie. Mr. Gorrie had found the roots of an alder penetrating into an old mine full of water, and developed there in a remarkable manner.

Dr. Neill stated that twenty years ago Mr. Riddoch of Falkirk had transmitted to him a specimen of the root of *Senecio Jacobæa* that had entered a drain by a very small orifice, but afterwards extended itself, completely filling the drain for about 20 feet.

Mr. Wyville Thomson referred to an instance which had come under his observation in Ayrshire, in which drains were completely obstructed at a place where they passed through a larch plantation, the roots of the larches having filled them up.

Sir John S. Forbes, in a letter addressed to Professor Balfour, gave some interesting particulars as to the water-pipes which supply the village of New Pitsligo, Aberdeenshire. Part of these tile-pipes, 3 inches bore, were laid about forty years ago, overlapping $2\frac{1}{2}$ inches, packed in clay throughout their whole length, and the joints filled with milled clay. The pipes are in general placed 3 feet deep; but in some instances they approach nearer the surface owing to the levels, and at these points roots have entered. The roots proceed from plants outside and never adhere to the tile. They run along the inside for 6 or 8 yards, and then become matted together so as to fill the pipes completely. The plants which have been observed to send their roots into the pipes are species of *Rumex* and *Carduus*, &c. The pipes require to be cleaned at least once in the season, which is done by a long wire with a screw at the end, which is twisted among the roots so as to break them up, and allow the loosened matter to pass out at the lowest level. Sir John sent a specimen of the root of a gooseberry bush which had entered the pipes where they passed through a garden.

Dr. Fleming suggested the importance of ascertaining the probable structural changes which enabled the roots of these plants to derive nourishment directly from running water.

Dr. Balfour exhibited specimens of a peculiarly knotted stem of an elm from Prestonhall. The leading stem had been broken off, and one of the side branches rising from a remarkably knotted base had become erect, giving the tree a peculiar aspect. All the branches of this new leader were covered with knots, while the other branches were free from them. The peculiarity was continued in plants raised from slips taken off the branch.

Dr. Balfour also noticed the occurrence in Prestonhall grounds of a mountain ash, from which a large limb had been broken, splitting the tree so as to expose its centre, which is now covered with roots, sent down from the branches above.

Dr. Balfour exhibited specimens of sycamore roots, taken by Mr. Gorrie from very stony ground, which had become flattened and hollowed so as to embrace large stones at different points. The roots, when removed, carried the stones with them, and in some instances

the stones were almost completely enveloped by the expanded continuous root.

5. "Remarks on the growth of *Bambusa arundinacea*," by Mr. Robert Scott. (See p. 120.)

Dr. Cleghorn of the Madras Army exhibited drawings of some interesting plants from Western Mysore, India, a tract of country little explored by botanists, where for some years he has been in a peculiarly favourable position for acquiring information. The district he represented to be singularly rich in natural productions: many medicinal shrubs are found, yielding gums, barks and dyes, the value of which is not sufficiently known or appreciated. There were laid before the meeting a specimen of Mysore gamboge, with figures of *Garcinia pictoria*, Rox., which furnishes it, and other *Guttiferae*; also *Zanthochymus pictorius*, Rox., &c. The analysis and researches of Dr. Christison (with the opinion of the Bombay Chamber of Commerce) has fully established the intrinsic value of this gamboge, whilst the concurrent testimony of several accurate observers prove that the tree is found in abundance at an elevation of 2000 to 3000 feet along a great portion of the range of Malabar Ghauts. The coffee-planters, who propose trading in the new article, have been seeking information, and it is expected that this hitherto neglected production of the forest may become an export of commercial importance from the western coast of the peninsula, rivaling Siam gamboge in the London market. Attention was directed to *Entada Pursaetha* (W. & A.), an immense climbing shrub which runs over the tallest forest trees; the legumes are often 3 feet long, and the seeds are used as weights in the bazaars. Among other plants exhibited were *Hexacentris Mysorensis* of Wight, *Xanthoxylon triphyllum*, Juss., and *Acrostichum flagelliferum* of Wallich. These drawings of Mysore plants, executed with the aid of a native artist, amount to 500; and the species collected by Dr. Cleghorn run up to 2000. From various interruptions and delicate health, the greater part of the collection remains unarranged. A sketch of the vegetation of Mysore was promised for a subsequent meeting.

Mr. M'Nab exhibited a peculiar gelatinous matter, which continues to increase in a solution of sugar, and forms it into vinegar. In the course of a month the mass divides, forming two independent masses, each of which has the power of carrying on the process of converting saccharine solution into vinegar. The vinegar produced is excellent, and is the only kind used by several persons in Edinburgh.

Mr. Evans exhibited *Antennaria dioica* and *hyperborea*, showing the difference between the two plants, the leaves of the latter being cottony on both sides, while those of the former are so on the under side only. Mr. Evans also exhibited plants of the Silesian potato, a small Ranunculaceous plant, whose tubers have been used for food.

Dr. Balfour exhibited male flowers of *Pinus Lambertiana* from Mr. Spiers, with whom this pine is flowering; and stated that the same plant has likewise produced fertile flowers, and is in course of ripening seeds.

Mr. Stark sent specimens for exhibition of the following Algæ dredged in the neighbourhood of Lamash, Arran :—*Bonnemaisonia asparagoides*, *Halymenia ligulata*, *Polysiphonia parasitica*, *Delesseria ruscifolia* and *Nicophyllum punctatum*.

LINNEAN SOCIETY.

November 7, 1848.—Edward Forster, Esq., V.P., in the Chair.

A paper was read by F. J. Graham, Esq., F.L.S., "On the Injuries sustained by certain Plants from the attacks of parasitic Fungi, with particular reference to the Cause of the Potato Disease."

In order to demonstrate the subject more clearly, Mr. Graham exhibited drawings, with magnified figures of several species of parasites; and a great many specimens of different plants, both native and exotic, presenting a healthy appearance on those parts which were still free from the attacks of the different species of mildew to which they were subject, but at the same time showing the most indisputable signs of disease on those parts which were infested by tufts of mildew. The manner in which one plant in particular, Shepherd's Purse (*Thlaspi Bursa Pastoris*, L.), was affected, was very remarkable. Portions of the stems of this were covered, to the extent of two or three inches, with *Botrytis parasitica*, which caused them to become gouty or swollen to three times their natural size; and eventually these parts assumed a brown colour and a moist putrescent character, which could be traced down the stalks, and in many cases killed the plants. Transverse sections of these blotches, compared with similar sections of a blotch on the potato stalk, exhibited the same effects, the dark fluid having penetrated the tissues of both to a considerable extent. Of all the species of parasitic mildews which he has noticed, Mr. Graham considers those belonging to the genus *Botrytis* to produce the severest injuries; and it is an undisputed fact that the potato crops have been universally attacked, during the last three seasons, by *Botrytis infestans*.

As to the manner in which these parasites acquire their destructive power, Mr. Graham considers that it arises from the natural decay of their *mycelium* or internal filaments, which he has found traversing the tissues of plants, beneath the external tufts of mildew. That the tissues of plants are extensively permeated by this *mycelium*, has been frequently shown by the Rev. M. J. Berkeley and other mycologists; but the important fact that these roots (as they may be termed) *die* within the tissues of plants, along with their superstructure, assuming a dark colour in decay and ultimately dissolving into a viscous mass, has hitherto, Mr. Graham states, escaped the notice of authors. Decaying matter being thus secretly introduced, corrupts the adjacent tissues, and in many cases spreads over the entire plant and kills it. Mr. Graham states that he has arrived at this conclusion after repeated examinations under powerful microscopes, but that the effects are visible in some cases to the naked eye. Experiments made by enclosing tufts of mildew in the sap of those plants on which it grew, also exhibited the results above stated.